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AF/ JFW  
2854



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Appn. Ser. No. 10/037,251

Art Unit 2854

Filed 1/4/02

Exr. L.J.Evanisko

Inventors Hougham et al

Atty Dkt No.YOR920010020US1

For: MULTILAYER ARCHITECTURE FOR MICROCONTACT PRINTING STAMPS

EXPRESS MAIL CERTIFICATE

MAILSTOP AF  
Commissioner For Patents,  
P.O. Box 1450  
Alexandria, Va. 22313-1450

Sir:

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Date of deposit 9/20/04

I hereby certify that the following attached papers and fee

Transmittal Letter - 1 page

Brief on Appeal - 7 pages- 3 copies

Brief Fee Deposit Account Authorization 1 page

are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37CFR1.10 on the date indicated above and are addressed to

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P.O. Box 1450  
Alexandria, Va. 22313-1450

Respectfully submitted,

Alvin J. Riddles

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*Alvin J. Riddles 9/20/04*



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DEPOSIT ACCOUNT CHARGE AUTHORIZATION

MAILSTOP AF  
Commissioner For Patents,  
P.O. Box 1450  
Alexandria, Va. 22313-1450

Sir:

It is hereby authorized to charge the appeal brief fee in the appeal in the above identified application, estimated to be \$330.00 to Deposit Account 50-0510.

*Alvin J. Riddles 9/20/04*  
Alvin J. Riddles  
Reg. No. 17862



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TRANSMITTAL LETTER

MAILSTOP AF  
Commissioner For Patents,  
P.O. Box 1450  
Alexandria, Va. 22313-1450

Sir:

Transmitted herewith is the Brief on Appeal of the above identified application in 3 copies together with a Deposit Account Charge Authorization for the Brief Fee Estimated to be \$330.00.

Respectfully submitted,

*Alvin J. Riddles* 9/20/04

Alvin J. Riddles  
Reg. No. 17862



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BRIEF ON APPEAL  
BEFORE THE  
BOARD OF PATENT APPEALS AND INTERFERENCES

In the appeal of the above identified application, the required 9 items in consecutive order are provided as follows.

Item 1. Real Party in interest

The entire right title and interest in the above identified application is the property of International Business Machines Corporation, of Armonk, N.Y.

Item 2. Related Appeals and Interferences

There are no related Appeals and Interferences.

Item 3. Status of claims

Claims 1 - 10, all the elected claims in the application, stand finally rejected, in a 4/22/04 final rejection.

A copy of the finally rejected appealed claims 1 - 10 is provided in Item 9 the Appendix in Section A thereof.

#### Item 4 Status of Amendments

All amendments directed to the merits are considered to have been entered. A recently required formality point involving claims in listings is not involved in the merits and need not be involved in this appeal.

#### Item 5. Summary of the invention.

In art of the fabrication of very finely patterned resilient stamping members that are to be used for the printing of seed layers of metal in the plating of patterns for electronic circuitry, situations are being encountered where being able to use multiple material properties that are not usually found in a single material, would be advantageous. For example, the surface of the stamp would have wettability properties optimized so that the liquid used as the seed material in the plating more easily wets the substrate on which the plating is to take place, the stamp must be structurally sufficiently durable with appropriate stiffness so as to maintain the integrity of the pattern being plated, and the ability to provide such properties as porosity in a specific location is useful for providing a capability to position a local fluid in the structure. Frequently in the art a situation may arise where, in a material, the optimization of one property operates to compromise another. In accordance with this invention, such material property considerations can be overcome by providing for example a multiple layer stamp with each layer providing a different

desired individual property. There can be a very thin region of the stamp structure that carries the raised relief patterned features arranged in one material while the bulk or support of the stamp structure could be made of a second material having other properties.

In the following, as a part of the summary of the invention, the language of each of the two independent, of the ten elected claims, is correlated with the locations in the specification and drawings. A copy of the claims is included in Item 9 Appendix Section "A" and a copy of the drawings is included in Item 9 Appendix Section "B"

		Dwg	Spec
1	1. In microcontact printing wherein an electronic circuitry pattern on the surface of an	Fig. 1 at A	Page 4 line 7
2	elastomeric stamp member is operable in a transfer of a further processing responsive	pattern 10,	
3	material, to a surface of a substrate,	surface 11, substrate 12	
4	the improvement comprising:		
5	said elastomeric stamp member having a surface region	layer 13	page 5
	of a material imparting to said		
6	stamp member at least one of the properties of adhesion and wettability enhancement	lines 1 - 11	
7	of the material of said circuitry pattern		page 6 lines 1 - 15

to said surface region, and,

8        said elastomeric stamp member further having  
at least one subsurface region, each said

elements 21, 23, 24

9        subsurface region being of a material imparting  
a particular physical property to said

10        stamp member.

Fig. 2    page 7 line 7 - page 8 line 15

1    7. A microcontact printing stamp,

2        comprising in combination :

3        a body having at least a layer imparting  
a bulk stiffness and flatness physical property on

substrate 12 surface 11

4        which there is a stamping pattern supporting surface,

pattern 10 page 7 lines 7 - 15

5        a stamping pattern layer positioned

on said pattern supporting surface of said body,

6        said stamping pattern layer including  
a negative relief stamping pattern in which the

7        spaces between the features of said  
stamping pattern are the positive relief embossed

8        portions of the final printing stamp,

9        said stamping pattern layer further being

of an electronic circuitry processable material

10        in which at least one of the physical

properties of adhesion enhancement and

11        wettability enhancement are imparted.

page 7 line 15 -page 8 line 6

**Item 6      The issues.**

The invention is a major step in the established field of microcontact printing using soft lithography, which may be considered to be ultrafine resilient stamping; in which monolayers of etchant resistant or seed catalysis materials are precisely transferred onto surfaces of a microcontact stamp structure. There are two technical paper references (Kumer et al and Hidbur et al) of record, illustrating the state of that art and the terminology used in it.

A first major issue will be the extent to which items must be directly expressed in claims to an improvement in an art where those items are well known and discussed in the literature of that art.

All claims stand rejected under 35USC112, 35USC102 and 35USC103 in relation to a broadest reasonable interpretation of the specific claim language type standard.

A second major issue will be on whether the broadest reasonable interpretation concept remains as being reasonable when there is in existence a recognized art within which the specific language of the claims will be practiced.

**Item 7   Grouping of claims**

There are two independent claims 1, and 7. Each of the independent claims is considered to be equally patentable over the art because each sets forth the invention differently and the combined elements of the claim are not shown in the art. Each of dependent claims 2, - 6 and 8 - 10, is also considered to be independently patentable through the adding of an additional limitation to a believed to be patentable claim and thus producing a patentable combination. Each dependent

claim incorporates all the limitations of the claim from which it depends. The combinations of the added limitations are not in the teaching of the references.

#### Item 8 Arguments

In appellants view, the examination of this application has been directed away from the art in which the invention resides. The invention is in a developed art of microstamping that positions materials in configurations for forming electronic parts. The patent art of record, (Maracus et al 5,937,758; Fugimora 4,306,498; Bruno et al US2001/0013294; and Wada ,Japan JP355032663A) , is each identified with US Class & Subclass 101/327. Some stamps in that art have general properties of having one portion of the stamp structure that carries a resilient relief pattern that retains a transferable material that is positioned on one side of a surface in the stamp structure and another portion positioned on the other side of that surface that serves a supporting function. The surface is usually the interface with the support member.

In contrast to those types of structures., this invention distinguishes through the use of individual and combinations of layers on both sides of the surface in the stamp so as to to produce microforming capabilities that have heretofore have not been available. The interface with the support is not always the support surface.

The specification directs attention to two exemplary technical articles( Kumer et al. and Hidber et al), copies of which were supplied, describing the state of that art.

In the final rejection a reading of the claims does not recognize the existence of the art and in essence considers anything not specifically recited as producing vague and indefiniteness with

thus supporting the 35USC 112 rejection. This in turn produces the effect that the elements of the microcontact printing stamp structure specified in the are not being given the proper weight. On page 3 of the final rejection beginning at the bottom paragraph and extending to the middle of page 5 extensive antecedent requirements and requirements for degrees of comparison appear to be advanced. It is appellants position that some of the requirements are inherent in microcontact structures of the type specified in the beginning of the claim and others such as wettability are merely attributes of physical events well known in the field. It is further appellants position that the claims should be read in connection with the specification and the drawings.

In view of the above it is appellants' position that the language of the rejection on the Maracas reference alone and the Maracas reference together with the Fugimora reference does not advance a *prima facie* case, and that the teaching of the reference and references in fact does not support the points relied on in the rejection language.

In view of the above it is submitted that the art and the positions taken with respect to the invention do not support the conclusions drawn in the final rejection.

It is respectfully urged that appellants' concept is completely novel and highly useful, that appellants' claims distinguish patentably over the art and that appellants are justly entitled to them.

Respectfully submitted,

*Alvin J. Riddles 9/29/04*  
Alvin J. Riddles  
Reg. No. 17862



1. In microcontact printing wherein an electronic circuitry pattern on the surface of an elastomeric stamp member is operable in a transfer of a further processing responsive material, to a surface of a substrate,
  - 4 the improvement comprising:
    - 5 said elastomeric stamp member having a surface region of a material imparting to said stamp member at least one of the properties of adhesion and wettability enhancement of the material of said circuitry pattern to said surface region, and,
    - 8 said elastomeric stamp member further having at least one subsurface region, each said 9 subsurface region being of a material imparting a particular physical property to said 10 stamp member.
  - 1 2. The microcontact improvement of claim 1 wherein said at least one subsurface 2 region, is a single region that imparts the bulk property of stiffness to said stamp 3 member.
  - 1 3. The microcontact improvement of claim 1 wherein said at least one subsurface 2 region, is a single region that imparts the bulk property of wettability enhancement to said 3 stamp member.

1      4. The microcontact printing improvement of claim 2 wherein another region of said at  
2      least one subsurface regions, imparts the property of porosity, and is positioned between  
3      said surface region and said stiffness bulk property imparting region.

1      5. The microcontact printing improvement of claim 3 wherein another region of said at  
2      least one subsurface regions, imparts the property of porosity, and is positioned between  
3      said surface region and said wettability enhancement bulk property imparting region.

1      6 .The microcontact printing improvement of claim 2 wherein said surface region is of the  
2      material known as Dow Corning Sylgard siloxane 184 and said subsurface region is of  
3      the material known as Dow Corning Sylgard siloxane 186.

1      7. A microcontact printing stamp,  
2      comprising in combination :  
3      a body having at least a layer imparting a bulk stiffness and flatness physical property on  
4      which there is a stamping pattern supporting surface,  
5      a stamping pattern layer positioned on said pattern supporting surface of said body,  
6      said stamping pattern layer including a negative relief stamping pattern in which the  
7      spaces between the features of said stamping pattern are the positive relief embossed  
8      portions of the final printing stamp,  
9      said stamping pattern layer further being of an electronic circuitry processable material  
10     in which at least one of the physical properties of adhesion enhancement and  
11     wettability enhancement are imparted.

- 1      8. The microcontact printing stamp member of claim 7 including a further layer
- 2      of a specific physical property imparting material positioned between said stamping
- 3      pattern layer and said layer of bulk stiffness and wettability enhancement physical
- 4      property imparting material.
  
- 1      9. The microcontact printing stamp member of claim 8 wherein said physical property
- 2      imparted by said layer of a specific physical property imparting material is the physical
- 3      property of porosity.
  
- 1      10. The microcontact printing stamp of claim 7 wherein said layer of a bulk stiffness and
- 2      wettability enhancement physical property imparting material, is the material known as
- 3      Dow Corning Sylgard siloxane 186 and the material of said stamping pattern layer is of
- 4      the material known as Dow Corning Sylgard siloxane 184.



FIG. 1

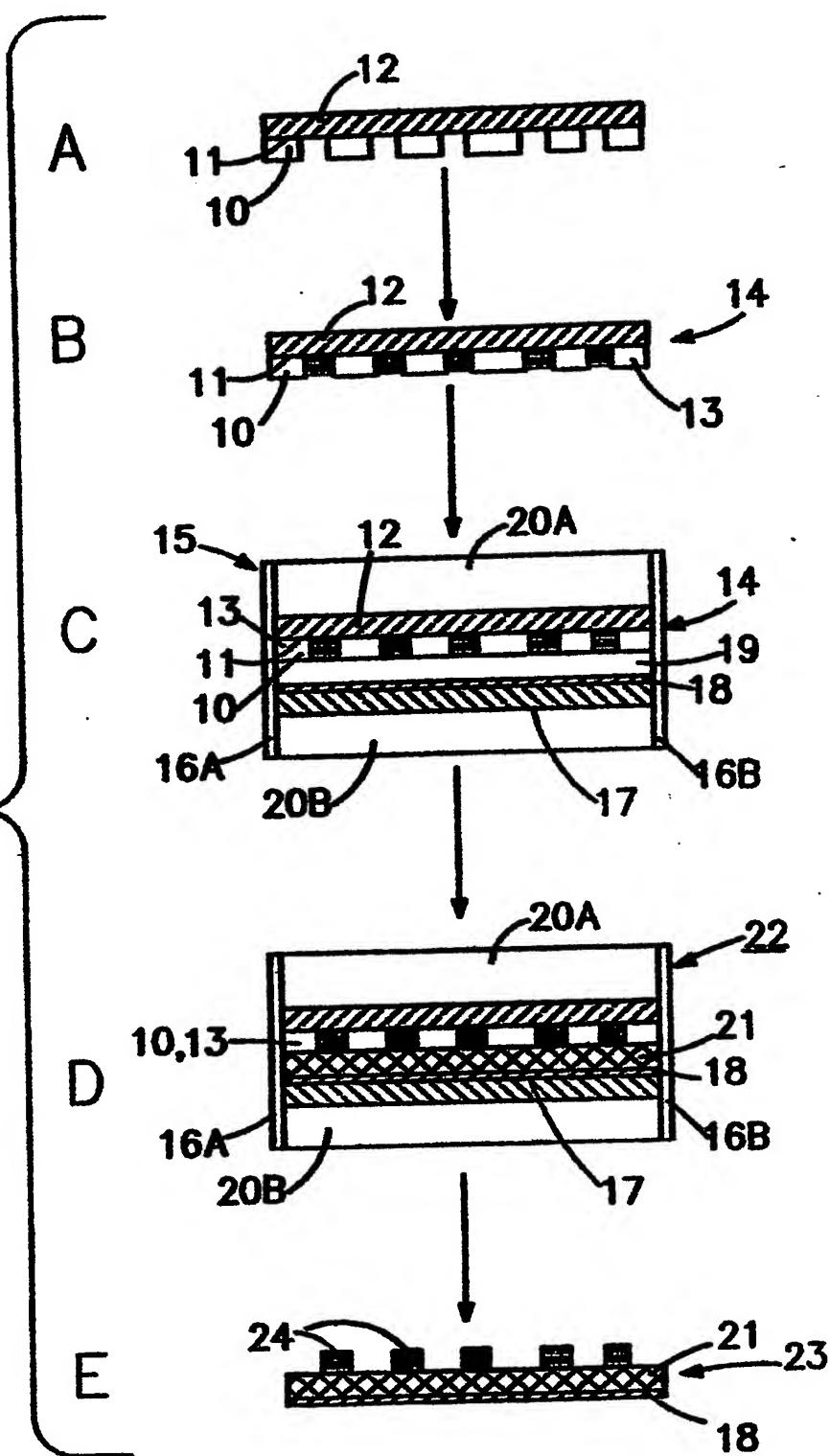




FIG. 2

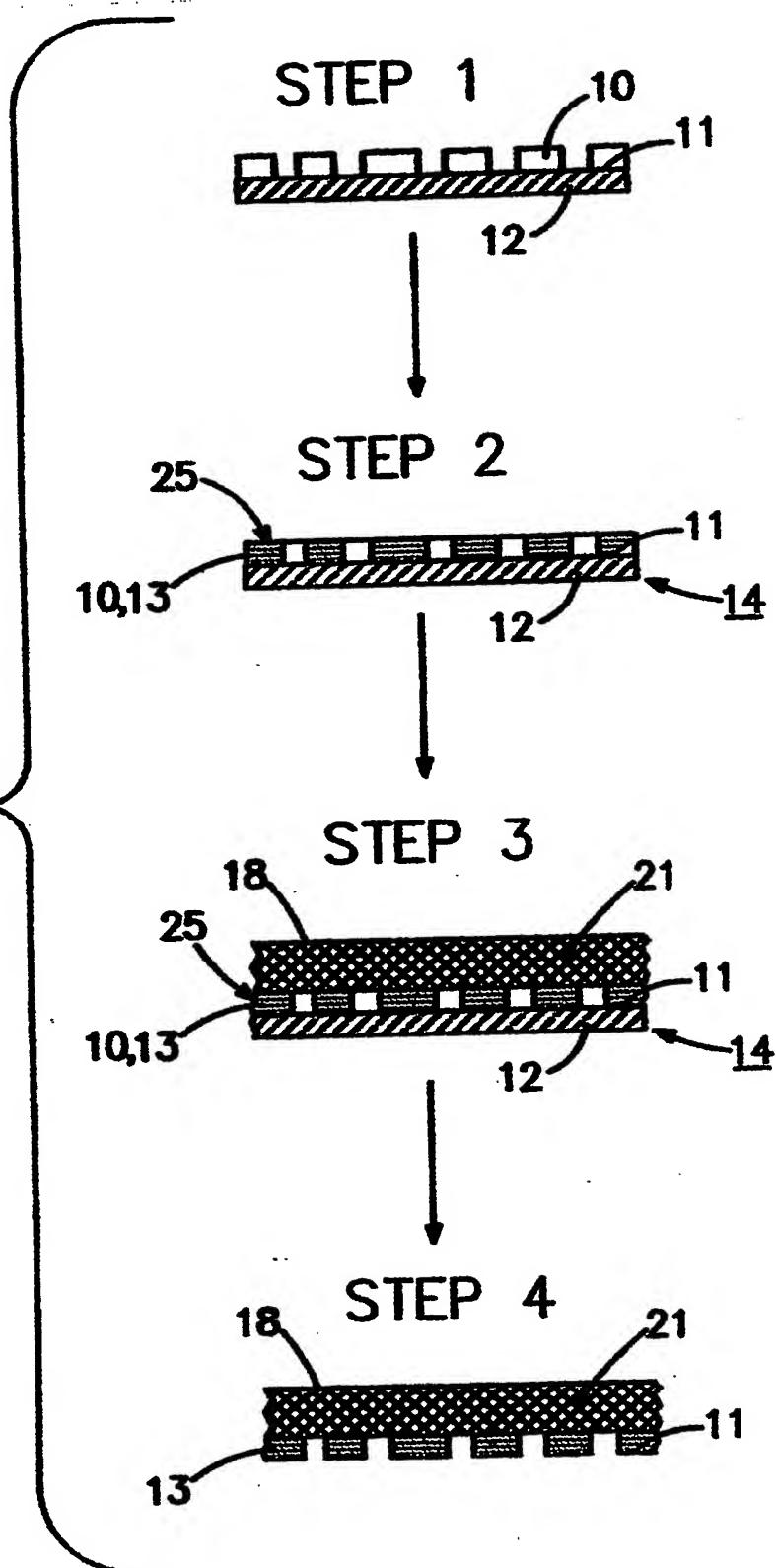


FIG. 3

